

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio for Elkem Metals Company

Public Notice No.:	OEPA Permit No.: 0ID00001*ED
Public Notice Date:	Application No.: OH0004006
Comment Period Ends:	

<u>Name and Address of Applicant:</u>	<u>Name and Address of Facility Where Discharge Occurs:</u>
Elkem Metals Company P.O. Box 299 Marietta, Ohio 45750	Elkem Metals Company State Route 7, South Marietta, Ohio 45750 Washington County
Receiving Water: Ohio River	Subsequent Stream Network: Ohio River

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency, as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

The draft permit contains effluent limits developed to comply with the requirements of Ohio Administrative Code (OAC) Section 3745-1-05. Any person who believes that these limits are eligible for revision in accordance with Section 3745-1-05(B) of the OAC may request the Director to consider such revision. Please contact the staff of the Division of Surface Water at (614) 644-2001 to obtain specific instructions and the forms necessary to make the request.

Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

**Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency
Attention: Division of Surface Water
Water Resource Management Section
P.O. Box 1049
Columbus, Ohio 43216-1049**

The OEPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

The application, fact sheet, public notice, permit including effluent limitations, special conditions, comments received and other documents are available for inspection and may be copied at a cost of 25 cents per page at the Ohio Environmental Protection Agency at the address shown above any time between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday. Copies of the Public Notice are available at no charge at the same address.

Location of Discharge / Receiving Water Use Classification

The Elkem Metals Marietta Plant is located off State Route 7 south of Marietta in Washington County, Ohio adjacent to the Ohio River. The outfalls discharge to Ohio River at approximately 176.75 USGS River Mile. Figure 1 describes the approximate locations of the discharge points. Three outfalls 003, 007 and 008 discharge to Ohio River. Outfall 003 is located on the Ohio River at river mile (RM) 804.0 in Marietta, Ohio.

Facility Description

Elkem Metals Company produces chromium and manganese ferroalloys and electrolytic chromium and manganese. The facility contains open ferroalloy furnaces, covered ferroalloy furnaces, slag processing and electrolytic chromium, and manganese production facilities. Furnace operations comprise two open and one semi-covered ferroalloy furnaces.

Plant operations can be divided into three areas: electric furnaces, vacuum furnaces, and electrochemical processes. The electric furnaces at the plant produce high carbon ferrochrome, and ferromanganese. Feed materials that include chromium or manganese ore, coke and fluxing agents are added to these furnaces on an as-needed basis so that they are filled at all times. Power is supplied through carbon electrodes producing the alloy in a molten state. The reduction reactions produce large quantities of air pollutants which are then removed using wet scrubbers.

The vacuum furnaces produce low carbon ferrochrome from the high carbon alloy produced in the electric furnaces. The crushed alloy is placed in a large vacuum chamber and heated to near its melting point. The carbon in the alloy reacts with oxygen and is removed as carbon monoxide by steam ejectors. Heat is supplied by electric resistance elements.

Electrolytic processes are used to produce high purity chromium and manganese. Low voltage direct current is passed through a solution of either manganese or chromium producing a deposit on cathode. This deposit is the final product. The feed material for the chromium process is the alloy produced in the electric furnace while the feed for the manganese process is slag from the furnaces. The use of ferromanganese slag is unique in the industry; normally ore is used as a feedstock. The processes performed at Elkem Metals Company are classified under the Standard Industrial Classification (SIC) Code 3313: Electrometallurgical Products. Ferroalloy Manufacturing Point Source Category (40 CFR Part 424) Effluent Limitation Guidelines apply to the industry. Specifically the subcategories that fall under the main category are Subpart A - Open Electric Furnaces with Wet Air Pollution Control Devices Subcategory, Subpart B - Covered Electric Furnaces and other Smelting Operations with Wet Air Pollution Control Devices Subcategory, Subpart C - Slag Processing Subcategory, Subpart F - Electrolytic Manganese Products Subcategory and Subpart G - Electrolytic Chromium Subcategory.

The Elkem Metals ferroalloy plant was formerly owned by Union Carbide Corporation. The plant was sold to Elkem Metals in July 1981. Union Carbide retained ownership of an electrolytic manganese dioxide process which is currently operated by the Union Carbide Battery Products Division. Under agreement, wastewater from the electrolytic manganese dioxide process are treated by Elkem Metals with wastewaters from the other electrolytic processes. At Elkem facility process wastewater is generated at the electrolytic production departments and at ferroalloy furnaces. The process wastewater generated in the electrolytic departments are treated at a Unox facility. This system

includes pH adjustment and aeration with 95 percent pure oxygen to oxidize soluble Mn^{++} and Fe^{++} to produce MnO_2 and Fe^{+++} . Following treatment in the Unox system, the electrolytic wastewater are combined with process wastewaters from the ferroalloy furnaces. The combined flow then passes through a series of settling ponds. The discharge point from the settling ponds used to be outfall 001. The leakage from sludge settling pond dike and some stormwaters used to be referred as outfall 002. Outfall 005 was the discharge from the sludge impoundment. However, outfall points 001 and 005 have been relocated in August 1994 by routing their flow to 003. They are now discharged through outfall 003, the discharge point of non-contact cooling water. Before being discharged through outfall 003, they are now internally sampled at 603 (formerly 001) and at 605 (formerly 005). Outfall 002 has been eliminated.

Once through cooling water drawn from Ohio River is used at the Elkem plant. The water is discharged to the Ohio River through outfall 003. The cooling water flow receives no treatment prior to discharge.

Sanitary water for the plant is supplied by the Marietta water supply system. The sanitary wastewater is treated at Elkem's own sewage treatment plant. Treatment consists of a imhoff cone, trickling filter sedimentation and disinfection. The sanitary discharge is called outfall 602. This flow combines with the cooling water from the ferroalloy furnaces and the electrolytic department and is discharged through outfall 003 to the Ohio River.

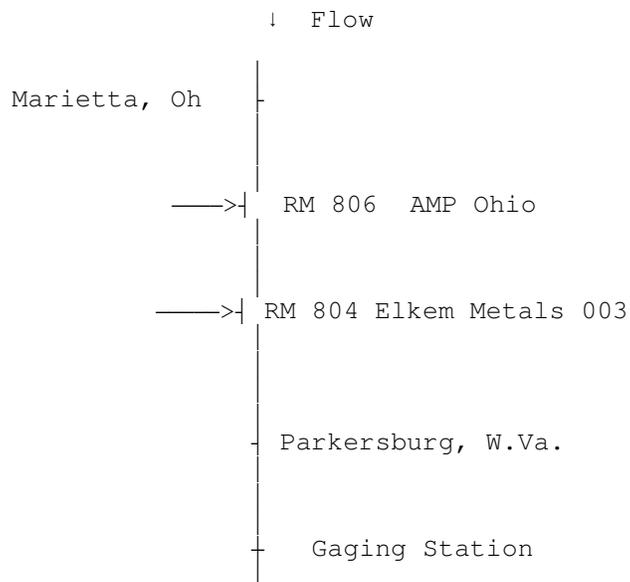
Two new outfalls have been added as a result of the closure of Elkem's fly ash landfill. Surface runoff from the landfill cap is discharged at outfall 007. Leachate from the landfill is discharged at outfalls 008. They both discharge to Ohio River.

****A MAP SHOWING THE LOCATION OF THE DISCHARGE(S) GOES ON THIS PAGE****

Schematic Location of discharge

Elkem Metals Co. is located on the Ohio River at river mile 804.0 in Marietta, Ohio. The Ohio River has the following designated uses: Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, Public Water Supply. The study area is depicted in Figure 1. This section of the Ohio River is identified by Ohio EPA River Code 25-500 and USEPA River Reach number 05030202-115.

Figure 1. Ohio River Study Area



Wasteload Allocation and Antidegradation

Determining appropriate effluent concentrations is a multiple step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits. In addition, antidegradation and whole effluent toxicity issues must be addressed.

Parameter Selection

Effluent data for the Elkem Metals Co. was used to determine what parameters should undergo wasteload allocation. The major source of effluent data was the self-monitoring data reported by the facility from January 1989 through May 1995 for outfalls 001 and 005, and from September 1994 through May 1995 for outfall 003. (Outfalls 001 and 005 are process waste streams from Elkem which are combined with American Municipal Power (AMP) of Ohio cooling water to form outfall 003 to the Ohio River.) The 001 effluent data had outliers for effluent flow (>12 mgd) . Outfall 005 had no outliers and 003 had outliers for conduit flow (>150 mgd) and chlorine (>0.75 mg/l). These extreme values were eliminated from the data base. The calculated monthly (M99) and daily (D99) 99th percentile values are presented in Table 1. For a summary of the screening results, refer to the parameter groupings at the end of this section.

Wasteload Allocation

For those parameters that required a wasteload allocation (WLA), the results were based on the applicable Outside Mixing Zone criteria for Warmwater Habitat, the Human Health criteria (dual-route exposure), the Agricultural Water Supply criteria, and the Inside Mixing Zone Maximum (IMZM) criteria. Available dilution rather than stream design flow was used to calculate WLA values. These dilution values were developed from an approved mixing study submitted by Elkem. (See correspondence of October 31, 1995 from Elkem documenting simulation of outfall mixing and WQM review.) The average aquatic life WLAs used a dilution factor of 19 , while the maximum aquatic life WLAs were based on a dilution factor of 6.5. The WLAs to maintain the WQS for human health and agricultural water supply were based on a dilution factor of 19. In addition, a limited Area of Initial Mixing (AIM) was approved with an associated dilution factor of 3. Therefore, IMZM values from the Water Quality Standards were multiplied by a factor of 3. The dilution values listed above also apply to the whole effluent toxicity calculations described below. Due to rerouting of the outfall scheme and combining AMP Ohio's cooling water with Elkem 001 and 005, all WLA calculations pertain to outfall 003 which is the final, mixed effluent stream entering the Ohio River. The data used in the WLA are listed in Tables 2 and 3. The wasteload allocation results to maintain all applicable criteria are presented in Table 4.

Reasonable Potential

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WLA (and the WQS) must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the most restrictive average WLA and the maximum WLA were selected from Table 4. The average WLA was compared to the monthly 99th percentile value from Table 1, and the maximum WLA was compared to the daily 99th value. Based on the calculated percentage of the allocated value, the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 5.

Antidegradation

The antidegradation application was based on effluent data reported by the facility from January 1989 through May 1995. The effluent data had outliers and were eliminated as described above in Parameter Selection. The antidegradation results are presented in Table 6.

Whole Effluent Toxicity

The allowable effluent toxicity (AET) is a factor considered in evaluating whole effluent toxicity. The AET calculations are similar to those for aquatic life criteria using the chronic toxicity unit (TU_c) for average and the acute toxicity unit (TU_a) for maximum. For the Elkem Metals Co. the AET values are 3.0 TU_a and 19.0 TU_c .

Table 1. Effluent Data for Elkem Metals

Parameter	Units	# of Samples	# < MDL	Monthly 99 pctl M99	Daily 99 pctl D99
<u>Self Monitor LEAPS data</u>					
Outfall 001					
Ammonia, Summer	mg/l	88	0	414.75	486
Ammonia, Winter	mg/l	72	0	347.5	388
Chromium, total rec.	ug/l	288	0	245.75	325
Chromium ⁺⁶ , dissolved	ug/l	282	203	40.75	89
Cyanide, free	mg/l	185	61	0.0425	0.05
Manganese	ug/l	291	2	21925	30000
Phenolics	ug/l	287	93	102.25	112
Total Suspended Solids	ug/l	284	0	18.25	21
Outfall 005					
Ammonia, Summer	mg/l	80	0	178	216
Ammonia, Winter	mg/l	73	0	122.4	133
Cadmium	ug/l	171	0	15.5	23
Chromium, total rec.	ug/l	280	1	328.25	375
Chromium ⁺⁶ , dissolved	ug/l	275	121	106.75	118
Cyanide, free	mg/l	93	81	2.50	6.8
Lead	ug/l	171	0	81.6	110
Manganese	ug/l	281	1	18775	19800
Phenolics	ug/l	281	149	8	13
Total Suspended Solids	mg/l	277	0	48.6	109
Zinc	ug/l	172	0	290	250
Outfall 003					
Chlorine, total residual	mg/l	1335	99	0.28	0.38

Table 2. Water Quality Criteria

Parameter		Outside Mixing Zone Criteria					Adjusted
		Average				Maximum Aquatic Life	Inside Mixing Zone Maximum*
		Public Water	Human Health	Agri-culture	Aquatic Life		
Ammonia, summer	mg/l	-	-	-	1.6	-	-
Ammonia, winter	mg/l	-	-	-	2.5	-	-
Cadmium	ug/l	10	-	50	1.5	6	36
Chlorine	mg/l	-	-	-	0.011	0.019	0.114
Chromium, total	ug/l	50	3430000.	100	280	2400	14700
Chromium ⁺⁶ ,	ug/l	-	-	-	11	15	93
Cyanide-free	mg/l	0.2	-	-	0.005	0.022	0.132
Lead	ug/l	50	-	100	5.1	130	780
Manganese	ug/l	50000	-	-	-	-	-
Phenolics	ug/l	5	-	-	-	-	-
Zinc	ug/l	5000	-	25000	140	160	960

* Note, the IMZM values directly from the Ohio River WQS were multiplied by a factor of three due to an approved AIM study.

Table 3. Instream Conditions and Discharger Flow

Parameter		Value	Source
Instream Hardness (mg/l)		145.	STORET
Instream Tempertaure (c)	Summer	25	STORET
	Winter	2.0	STORET
Instream pH	Summer	7.1	STORET
	Winter	7.2	STORET
Background Water Quality (ug/l)			
Ammonia (mg/l)	Summer	0.12	STORET
Ammonia (mg/l)	Winter	0.41	STORET
Cadmium		1.0	STORET
Chlorine (mg/l)		0.	Assumed
Chromium ⁺⁶ , diss.		0.	Assumed
Chromium, total res.		5.0	STORET
Cyanide, free (mg/l)		0.	Assumed
Lead		10.	STORET
Manganese		5.0	Assumed
Phenolics		0.07	Assumed
Zinc		35.	STORET
Elkem Metals Co. (cfs)		89.	Elkem

Table 4. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter (ug/l)	Average			Maximum Aquatic Life	Adjusted Inside Mixing Zone Maximum
	Human Health	Agri Supply	Aquatic Life		
Ammonia, summer (mg/l)	--	--	28.2	--	--
Ammonia, winter (mg/l)	--	--	40.1	--	--
Cadmium	172. ^A	932. ^A	10.5	33.5	36.
Chlorine, total res (summer)	--	--	210. ^A	123. ^A	114.
Chromium ⁺⁶ , dissolved	--	--	209. ^A	97.5 ^A	93.
Chromium, total	860.	1810.	5230.	15572. ^A	14700.
Cyanide, free (mg/l)	3.8 ^A	--	0.095	0.143 ^A	0.132
Lead	770.	1720. ^A	10.0 ^B	790. ^A	780.
Manganese	950000.	--	--	--	--
Phenolics	94.	--	--	--	--
Zinc	94370. ^A	474370. ^A	2030. ^A	847.5	960.

^A Allocation must not exceed the Inside Mixing Zone Maximum.

^B Upstream lead concentration exceeds aquatic life average WQS of 5.1 ug/l.

Table 5. Parameter Assessment

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- Group 1 - Parameter has no applicable WQS. No limit recommended. Monitoring optional.
Suspended Solids
- Group 2 - Existing effluent less than 25% of WQS or all data below minimum detection limit. WLA not required. No limit recommended. Monitoring optional.
No parameters fit the criteria of this group.
- Group 3 - $D99 < 25\%$ of the maximum WLA and $M99 < 25\%$ of the average WLA. No limit recommended. Monitoring optional.
Manganese
- Group 4 - $D99 \geq 25\%$ but $< 50\%$ of the maximum WLA or $M99 \geq 25\%$ but $< 50\%$ of the average WLA. Monitoring is appropriate.
Chromium, total
Cyanide, free
Zinc
- Group 5 - $D99 \geq 50\%$ of the maximum WLA or $M99 \geq 50\%$ of the average WLA.

Limits to Protect Numeric Water Quality Criteria @ **Outfall 003**

Parameter (ug/l)	Annual Effluent Limits	
	Average	Maximum
Ammonia, Summer (mg/l)	28.2	--
Ammonia, Winter (mg/l)	40.1	--
Cadmium	11.	34.
Chlorine, total res. summer only	--	114.
Chromium ⁺⁶ , dissolved --	93.	--
Lead	10.	780.
Phenolics	94.	--

Table 6. Antidegradation

Parameter	Average	Maximum
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Due to rerouting of outfalls, effluent concentration data was insufficient to predict antidegradation values.

Description of Existing Discharge

Table 8. provides a summary of the Elkem Metals current permit limits for outfall 003 and a summary of the unaltered monthly operating report data for 1995. The routing of flows were completed in 1994. The effluent data of 1995 for outfall 003 reflects the representative characteristics of the pollutants.

The main purpose for routing the flows was to create a non-toxic effluent from outfall 003 so that Elkem Metals could meet Ohio EPA's toxic standard of 1.0 TU_a (acute toxicity). Test results from Elkem Metals showed toxicity compliance limit with fish species daphnia magna but not with fathead minnow. Elkem metals submitted mixing study in order to prove available dilution to help agency's assumption of stream design flow. After review of mixing study, a Limited Area of Initial Mixing (AIM) was approved with an associated dilution factor of 3. The allowable effluent toxicity (AET) values were calculated to be 3.0 TU_a and 19.0 TU_c (Chronic toxicity unit). Most recent toxicity tests (dated 12/11/95) by Elkem Metals showed <1.0 TU_a with daphnia magna and 1.09 TU_a with Fathead Minnow.

Receiving Stream Impacts

No biological data are available. However, based on mixing zone study, it is anticipated there is little chance if any, for whole effluent toxicity downstream of the discharge. The Ohio Department of Natural Resources fish kill records from 1965 to 1987 contained no reported fish kill investigations suspected to have been caused by Elkem Metals. The Ohio EPA Emergency Response records from 1978 to 1989 contained 50 reported spills and 53 reported spills between 1989 to 1995 at Elkem Metals.

Wasteload Allocation Results

As explained in the wasteload allocation (WLA), the effluent limits were calculated to maintain the designated use in the Ohio River.

Effluent Limitations, Monitoring Requirements and their Justification

The Ohio River is presently designated for the following uses based upon the Ohio Water Quality Standards (OAC 3745-1-32): Warmwater Habitat, Public Water Supply, Agricultural Water Supply, Industrial Water Supply and Bathing Waters.

Limits were developed to see that parameters in outfall 003 are protective of Water Quality Standards and the loadings at the calculated outfall 006 (though non-existent and termed as calculated in the permit) are protective of federal effluent guideline based limitations.

It is to be noted here that antibacksliding was not relevant while developing the present permit limits because production values have changed since the last permit was written back in 1991.

It is also noted that Table 7 and not Table 5 is the recommended wasteload allocation table for outfall 003. This is because annual 1995 effluent data for 003 was taken into account in Table 7 while developing monitoring and limitation requirements. Table 5 did not consider effluent data for parameters (except total residual chlorine) at outfall 003 in developing groupings. The groupings were based on M99 and D99 at outfalls 001 and 005 and not at outfall 003.

As the sanitary WWTP is designed for 0.1 MGD, the sanitary sludge monitoring station remained in the permit. The facility needs to continue sanitary sludge management practices. Six months schedule to submit an updated sanitary SMP (Sludge Management Plan) has been included in the permit.

Elkem's long pending FDF variance request to U.S. EPA (Region V) for ammonia and manganese has not yet been officially resolved. In absence of such a determination by US EPA as of February, 1996, a compliance schedule will be given by issuing a DFFO (Director's Final Findings and Orders) to help Elkem Metals meet BAT effluent limitations in case the variance request is denied. Elkem Metals has also recently submitted a draft 301(g) variance request for modified effluent limitation for Total Phenol at calculated outfall 006. They are in the process of submitting a formal request for this variance. The request is to include BPT based Phenols limit instead of BAT based limits in the permit. As the proposed limits have no water quality impact, Ohio EPA will send the variance request for review to U.S. EPA (Region V). A compliance schedule for phenols like Ammonia and Manganese will be included in the DFFO. This will help Elkem Metals meet BAT effluent limitations for phenols in case the variance request is denied by U.S. EPA. Production values have changed since the last permit was issued in 1991. Accordingly BAT loading values have been recalculated and the new DFFO will include these values. The existing DFFO that addressed FDF variance request during last permit renewal in September 1991 will be revoked.

Tables 10, 11, and 12 present the final effluent limitations, monitoring requirements and their justification for outfalls 603, 605 and the calculated outfall 006 (combined loadings of 603 and 605). Tables 13 and 14 present the description for outfalls 003 and 602. Justification for effluent limits and monitoring requirements for outfalls is self-explanatory. For calculated outfall 006, Elkem Metals requested a BAT allocation for Cyanide from their open furnaces. Both Elkem Metals and Ohio EPA discussed the issue about the appropriate BPJ-BAT allocation for Cyanide at the open air furnaces. Ohio EPA maintained that water usage for open furnace was less than for closed furnace and therefore a more restrictive standard should be justified. Ohio EPA recommended allocating CN for the open furnace at the same ratio between BAT/open furnace and BAT/closed furnace for the other pollutants, like Chromium, phenol. Based on this, the total CN BAT allocation for the furnaces was given in the permit as 0.35 kg for 30-day average and 0.66 kg for daily maximum. Due to a history of many spills at this facility over the past years, an updated best management practices plan has been recommended in the permit for the control of toxic pollutants, oils and other unauthorized pollutants that may be discharged from the facility.

For the life of the permit, it is recommended that the permittee shall conduct quarterly definitive acute toxicity tests using Ceriodaphnia dubia and fathead minnows on effluent samples from outfall 003. These tests shall be conducted as specified in Section 2 of the biomonitoring guidance.

Elkem Metals OID00001: Outfall 003; 1995 Data only

Table 7. Parameter Groupings: cadmium, chlorine, chromium⁺⁶, lead, phenolics

Parameter	M99/WLA (%)	D99/WLA (%)	Group	Observations
cadmium	44.4	23.5	4	16
chlorine	--	228	5	193
chromium ⁺⁶	0	0	3	17
lead*	165	3.5	5	5
phenolics	8.4	--	3	16

* Considerations for lead: The group 5 assessment for the average lead case is primarily due to the high Ohio River lead background concentration of 10.0 ug/l used in the WLA. This is the assumed value based on the closest STORET stations and data available. The actual lead concentration just upstream of Elkem outfall 003 could be less than 10.0 ug/l. Elkem could measure lead concentrations at the NCCW intake to resolve this issue. For example, if the Ohio River lead background concentration was found to be 8.0 ug/l, then lead becomes a group 4 (monitoring) parameter.

Group 5 means Limit

Group 4 means Monitoring

Group 3 means Optional Monitoring

Table 9. Outfall 003 for 1995

	n	M99	D99	<MDL
ug/l Cd	16	4.88	8	0
mg/l TRC	193	0.3345	0.26	64
ug/l Cr, Tot. R.	16	94.55	155	0
ug/l Cr ⁺⁶	17	0	0	17
mg/l Free CN	16	0.0061	0.001	15
ug/l Pb	16	16.47	27	0
ug/l Mn	16	7466	12240	0
ug/l Tot. Phenol	16	7.93	13	11
mg/l TSS	38	131.15	215	0
ug/l Zn	16	91.5	150	0

Table 8. Elkem Metals Company OID00001003 outfall current permit limits and a summary of the unaltered monthly operating report data of 1995. All values are based on annual records. n = number of analyses.

Parameter	Current Permit		n	1995		
	Limits 30 day	daily		50th %ile	95th %ile	Range
Temperature °C (Summer)	--	--	107	26	30	20-30
pH S.U.	6.5 -	9.0	111	8.6	8.9	7.2-8.9
TSS mg/l	--	--		24	25	138 15-138
NH ₃ -N mg/l (Summer)	--	--	16	30	49	21-130
Free Cyanide mg/l	--	0.044	16	0	0	0-0.01
Chromium ⁺⁶ ug/l	--	31	17	0	0	0-0
Manganese ug/l	--	--	16	4000	6560	2160-12240
Zinc ug/l	--	330	16	35	108	20-150
Cadmium ug/l	--	12	16	3	8	1-8
Lead ug/l	--	270	16	13	23	3-27
Chromium, Total ug/l	--	--	16	45	66	23-155
Phenolic, Total ug/l	--	--	16	0	8	0-13
Flow mgd	--	--	273	57.6	86.4	34.56-100.8
TRC mg/l	--	0.2	47	0	0.04	0-0.13

Table 10. Final effluent limits and monitoring requirements for Elkem Metals outfall OID00001603.

Parameter	Units	Effluent Limits				Basis ^a
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----	Monitor -----	-----	Monitor -----	OEPA Policy ^b
TSS	mg/l	-----	Monitor -----	-----	Monitor -----	BPT
Chromium, T. R.	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Hex. Chromium	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Manganese, Total	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Cyanide, Total	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Phenols	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Ammonia-N	mg/l	-----	Monitor -----	-----	Monitor -----	BAT
pH	S.U.	-----	Monitor-----	-----	Monitor---	BAT

^a Definitions: BPT = Best Practicable Control Technology currently available (Part 424; BAT = Best Available Technology economically achievable (Part 424).

^b Agency policy requires monitoring, including flow and indicator parameters, to assist in the evaluation of effluent quality and treatment plant performance (Division of Surface Water Policy DSW 0100.012).

Table 11. Final effluent limits and monitoring requirements for Elkem Metals outfall OID00001605.

Parameter	Units	Concentration		Effluent Limits Loading (kg/day) ^a		Basis ^a
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----	Monitor -----	-----	Monitor -----	OEPA Policy ^b
TSS	mg/l	-----	Monitor -----	-----	Monitor -----	BPT
Chromium, T. R.	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Hex. Chromium	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Manganese, Total	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Cyanide, Total	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Phenols	µg/l	-----	Monitor -----	-----	Monitor -----	BAT
Ammonia-N	mg/l	-----	Monitor -----	-----	Monitor -----	BAT
pH	S.U.	-----	Monitor -----	-----	Monitor -----	BAT

^a Definitions: BPT = Best Practicable Control Technology currently available (Part 424); BAT = Best Available Technology economically achievable (Part 424).

^b Agency policy requires monitoring, including flow and indicator parameters, to assist in the evaluation of effluent quality and treatment plant performance (Division of Surface Water Policy DSW 0100.012).

Table 12. Final effluent limits and monitoring requirements for Elkem Metals calculated outfall OID00001006 (summation of outfalls OID00001603 and OID00001605).

Parameter	Units	Concentration		Effluent Limits Loading (kg/day) ^a		Basis ^a
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Ammonia-N	mg/l	--	--	147	295	BAT
Hex. Chromium	µg/l	--	--	0.066	0.132	BAT
Chromium, Total	µg/l	--	--	1.72	3.43	BAT
Cyanide, Total	µg/l	--	--	0.35	0.66	BAT
Manganese, Total	µg/l	--	--	29.5	59.52	BAT
Phenols	µg/l	--	--	0.072	0.144	BAT
Flow	MGD	-----	Monitor -----	-----	Monitor -----	OEPA Policy ^b
TSS	mg/l	--	--	821	1641	BPT

^a Definitions: BPT = Best Practicable Control Technology currently available (Part 424); BAT = Best Available Technology economically achievable (Part 424).

^b Agency policy requires monitoring, including flow and indicator parameters, to assist in the evaluation of effluent quality and treatment plant performance (Division of Surface Water Policy DSW 0100.012).

Table 13. Final effluent limits and monitoring requirements for Elkem Metals outfall OID00001003.

Parameter	Units	Effluent Limits				Basis ^a	
		Concentration	Loading (kg/day) ^a				
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum		
Flow	MGD	-----	Monitor	-----	Monitor	-----	OEPA Policy ^b
Temperature	°F	-----	Monitor	-----	Monitor	-----	OEPA Policy ^b
Chlorine, T. R.	µg/l	--	0.2*	--	--	--	BPJ
TSS	mg/l	--	--	--	--	--	BPJ
pH	S.U.	-----	-----	6.5 to 9.0	-----	-----	WQS
Cadmium	µg/l	-----	Monitor	-----	Monitor	-----	WLA
Lead**	µg/l	--	780	--	--	--	WLA
Acute Toxicity	TU _a	--	3.0	--	--	--	OEPA Toxics Strategy
<u>Ceriodaphnia dubia</u>							
Acute Toxicity	TU _a	--	3.0	--	--	--	OEPA Toxics Strategy
<u>Pimephales promelas</u>							

^a Definitions: WQS = Ohio Water Quality Standards (OAC 3745-1); BPJ = Best Professional Judgement; WLA = Wasteload Allocation

^b Agency policy requires monitoring, including flow and indicator parameters, to assist in the evaluation of effluent quality and treatment plant performance (Division of Surface Water Policy DSW 0100.012).

* The Total residual Chlorine limit is the maximum allowed at any time at the outfall and may not be discharged for more than two hours per day.

** Based on the database to be furnished by the permittee for intake and effluent samples, 30-day average limitation/monitoring will be re-evaluated.

Table 14. Final effluent limits and monitoring requirements for Elkem Metals outfall OID0000602.

Parameter	Units	<u>Effluent Limits</u>				Basis ^a
		Concentration	Loading (kg/day) ^a			
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----		----- Monitor -----		OEPA Policy ^b
TSS	mg/l	30	45	11.4	17	OEPA Policy ^b
Fecal Coliform (Summer)	#/100ml	200	400	--	--	WQS
CBOD ₅	mg/l	25	40	9.5	15	OEPA Policy ^b

^a Definitions: WQS = Ohio Water Quality Standards (OAC 3745-1);

^b Agency policy requires monitoring, including flow and indicator parameters, to assist in the evaluation of effluent quality and treatment plant performance (Division of Surface Water Policy DSW 0100.012).